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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/804,894
Filing Date: March 19, 2004
Appellant(s): BROWNE, EDWARD P.

John E. Mrozinski, Jr. (Reg. No. 46,179)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10 July 2008 appealing from the Office action mailed 14 June 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct. No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,359,101	O'Connor et al.	03-2002
6,077,978	McDaniel et al.	06-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-10, 13-16, 18, 19, 33, and 34 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over O'Connor et al (US Pat. No. 6,359,101).

Regarding claims 1, 5-10, 13-16, 18, and 19, O'Connor et al. disclose: (1) a process for the polyoxyalkylation of a starter (Abstract; column 1, lines 5-18), comprising:

(a) establishing oxyalkylation conditions in an oxyalkylation reactor in the presence of a DMC catalyst (Abstract; column 14, line 15 through column 15, line 62; Examples);

(b) continuously introducing into the reactor at least one alkylene oxide and a low molecular weight starter (Abstract; column 3, line 58 through column 6, line 2) acidified with at

least one of an inorganic protic mineral acid and an organic acid, wherein the acid comprises greater than 100 ppm, based on the weight of the starter (column 10, lines 57-64; Examples); and

(c) recovering an oxyalkylated low molecular weight starter polyether product (Abstract; column 3, line 58 through column 6, line 2);

(5) wherein the acid is chosen from *see claim for list* (column 10, lines 57-64; Examples);

(6) wherein the acid is chosen from *see claim for list* (column 10, lines 57-64; Examples);

(7) wherein the acid is phosphoric acid (column 10, lines 57-64; Examples);

(8) wherein the acid comprises greater than 100 ppm to about 2,000 ppm, based on the weight of the starter (column 10, lines 57-64; Examples);

(9) wherein the acid comprises about 200 ppm to about 300 ppm, based on the weight of the starter (column 10, lines 57-64; Examples);

(10) wherein the reactor is a continuous reactor (column 14, line 15 through column 15, line 62); (13) wherein the continuous reactor comprises a back-mixed reactor (column 14, line 15 through column 15, line 62: *see CSTR*);

(14) wherein the DMC catalyst is zinc hexacyanocobaltate (column 12, line 43 through column 13, line 30 *(see referenced documents in this passage)*; see also column 6, lines 6-18 and claims 7 & 20);

(15) wherein the alkylene oxide is *see claim for list* (Abstract; column 3, line 58 through column 6, line 2; Examples: *see "PO"*);

(16) wherein the alkylene oxide is propylene oxide (Abstract; column 3, line 58 through column 6, line 2: *see "PO"*);

(18) wherein the process is continuous (column 14, line 15 through column 15, line 62); and

(19) wherein the process is semi-batch (column 14, line 15 through column 15, line 62).

O'Connor et al. disclose, "These (polyester) polyols can range in molecular weight from 300 to 30,000," *(see column 13, line 55 through column 14, line 14)*; however, they do not explicitly disclose the claimed molecular weight range of about 260 Da to about 2,500 Da.

Firstly, it has been found that when a claimed range, "overlap(s) or lie(s) inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists – *see MPEP 2144.05*. Secondly, it should be noted that the O'Connor et al. reference satisfies all of the process limitations set forth in the instant claims. In light of this, one of ordinary skill in the art would have expected to inherently produce the same or obvious results from the same or obvious process.

Therefore, the teachings of O'Connor et al. would have inherently or obviously satisfied the instant invention because they disclose the same process limitations set forth in the instant claims, wherein one of ordinary skill in the art would have expected to inherently produce the same or obvious results from the same or obvious process. Furthermore, they disclose a molecular weight range that overlaps the molecular weight range set forth in the instant claims.

Regarding claims 2-4, the starter materials set forth in the claims are recognized as non-preferred materials in O'Connor et al. – *see column 10; lines 30-38; column 11, lines 44-55*. However, it has been found that, "The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain," – *In re Heck*, 699 F.2d

1331, 1332-33, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting *In re Lemelson*, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)). *See: MPEP 2123*.

Therefore, the limitations of claims 2-4 are obviously or inherently satisfied because O'Connor et al. consider these starter materials as non-preferred embodiments.

Regarding claims 33 and 34, the teachings of O'Connor et al. are as set forth above and incorporated herein to satisfy the limitations of claims 20-31, 33, and 34.

Claim Rejections - 35 USC § 103

Claims 1-16, 18, 19, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDaniel et al. (US Pat. No. 6,077,978).

Regarding claims 1-16, 18, and 19, McDaniel et al. disclose: (1) a process for the polyoxyalkylation of a starter (Abstract; column 6, lines 48-58), comprising:

(a) establishing oxyalkylation conditions in an oxyalkylation reactor in the presence of a DMC catalyst (Abstract; *see also column 6, line 48 through column 7, line 6*);

(b) continuously introducing into the reactor at least one alkylene oxide and a low molecular weight starter (Abstract; *see also column 6, line 48 through column 7, line 6*) acidified with at least one of an inorganic protic mineral acid and an organic acid (Abstract; column 6, lines 48-58); and

(c) recovering an oxyalkylated low molecular weight starter polyether product (Abstract; Examples);

(2) wherein the starter is chosen from glycerine, diglycerol and polyglycerol (column 5, lines 25-39; column 7, lines 7-20);

(3) wherein the starter is glycerine (column 5, lines 25-39; column 7, lines 7-20);

(4) wherein the starter is chosen from ethylene glycol, propylene glycol, dipropylene glycol, trimethylol-propane, pentaerythritol, sorbtiol, and sucrose (column 5, lines 25-39; column 7, lines 7-20);

(5) wherein the acid is chosen from *see claim for list* (column 6, lines 3-23);

(6) wherein the acid is chosen from *see claim for list* (column 6, lines 3-23);

(7) wherein the acid is phosphoric acid (column 6, lines 3-23);

(10) wherein the reactor is a continuous reactor (column 7, lines 21-55); (11) wherein the continuous reactor comprises a tubular reactor (column 7, lines 21-55); (12) wherein the step of continuously introducing the at least one alkylene oxide and the low molecular weight starter comprises multi-point addition (column 7, lines 21-55); (13) wherein the continuous reactor comprises a back-mixed reactor (column 7, lines 21-55: *see CSTR*);

(14) wherein the DMC catalyst is zinc hexacyanocobaltate (Examples: *see column 9, lines 25-36*);

(15) wherein the alkylene oxide is *see claim for list* (Examples: *see column 9, lines 37-45*);

(16) wherein the alkylene oxide is propylene oxide (Examples: *see column 9, lines 37-45*);

(18) wherein the process is continuous (column 7, lines 21-55); and

(19) wherein the process is semi-batch (column 7, lines 21-55: *see lines 48-49*).

McDaniel et al. disclose an almost identical process to claim (1) (Abstract; column 6, lines 48-58); however, the teachings of McDaniel et al. are deficient in that they fail to explicitly

disclose the use of: (1) greater than 100 ppm of acid; (8) greater than 100 ppm to about 2,000 ppm of acid; and (9) about 200 ppm to about 300 ppm of acid, all based on the weight of the starter. Rather, McDaniel discloses, "*In general*, less than 100 ppm acid based on total low molecular weight starter need to be added," (column 6, lines 55-58).

McDaniel et al. establish that this concentration is a result-effective variable, wherein a minimum is required to prevent de-activation of the DMC catalyst (column 5, lines 3-24). Their *general* teaching of less than 100 ppm is open to possible ranges above 100 ppm. Furthermore, applicant fails to show criticality for the lower end-point(s) of the claimed range(s).

In light of this, it has been found that, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation," – *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); and, "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation," – *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the acid concentration, by providing the instantly claimed amount of acid, in the process of McDaniel et al. because McDaniel et al. establish that this concentration is a result-effective variable, wherein a minimum is required to prevent de-activation of the DMC catalyst. Furthermore, applicant fails to demonstrate criticality for the claimed ranges.

Further, with respect to the range of claim (1), the claimed range of greater than 100 ppm potentially abuts the disclosed range of less than 100 ppm. Even if these ranges do not touch or

overlap, it has been found that a *prima facie* case of obviousness exists where, "the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties," – *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

In addition, it should be noted that if these obvious amounts of acid were used in the process of McDaniel et al., one of ordinary skill in the art would have expected the process to yield the same molecular weight ranges set forth in claim (1) *(of about 260 Da to about 2,500 Da)*. One of ordinary skill in the art would have expected to inherently produce the same or obvious results from the same or obvious process.

Regarding claims 33 and 34, the teachings of McDaniel et al. are as set forth above and incorporated herein to satisfy the limitations of claims 33 and 34.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor et al (US Pat. No. 6,359,101) in view of McDaniel et al. (US Pat. No. 6,077,978).

The teachings of both O'Connor et al. and McDaniel et al. are as set forth above and incorporated herein. The teachings of O'Connor et al. disclose a continuous reaction; however, they fail to explicitly disclose: (11) the use of a tubular reactor; and (12) the use of multi-point addition for introducing the reactants.

The analogous nature of these two references is readily established in light of the prior art rejections set forth above. In light of this, the teachings of McDaniel et al. establish that these limitations are recognized in the art as suitable reactors and feed techniques *(see column 7, lines 21-55)* for this type of continuous reaction.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a tubular reactor and multi-point addition, as taught by McDaniel et al., in the process of O'Connor et al. because the teachings of McDaniel et al. establish that these limitations are recognized in the art at suitable reactors and feed techniques for this type of continuous reaction.

(10) Response to Argument

On pages 7-8 of the Brief *(particularly lines 13-25 of page 7)*, Applicant argues that the processes of O'Connor are not commercially viable due to their material ratios and reactor specifics. In essence, they argue that the instant invention is not obvious because of their own reactor specifics and material ratios. In response to applicant's argument that the reference fails to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., material ratios and reactor specifics) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

On page 8 of the Brief *(see lines 11-20)*, Applicant argues that O'Connor et al. teach away from the use of glycerine. Specifically, they state that glycerine is not used and can only

be used in the prior art method with small reactors, wherein these small reactors are not suitable for commercially viable processes. Firstly, it should be noted that glycerine in only featured in dependent claims 2 and 3. Secondly, although glycerine is a *non-preferred* material *(see column 11, lines 44-55)*, it still represents a relevant prior art teaching. Thirdly, there is nothing in the instant claims that limits or addresses the size of the reactor.

On pages 10-11 of the Brief *(particularly the bottom half of page 10)*, Applicant accuses the Examiner of hindsight reconstruction in the rejection over McDaniel et al. Specifically, this is with respect to the instantly claimed range of *greater than 100 ppm of acid*. As discussed above, the ranges in question are so close that it is difficult to envisage the differing effects of the instantly claimed range and the prior art range. This is especially the case when comparing the lower limit of claim 1 *(just above 100 ppm)* and the upper limit of the prior art *(just below 100 ppm)*. Applicant has also failed to show criticality for this end point. Without this showing, it is unclear what makes the 100-ppm threshold special. This lack of criticality also renders the other claimed ranges obvious because the prior art demonstrates: (a) that the *general* teaching of less than 100 ppm is open to possible ranges above 100 ppm; and (b) that the acid quantity is a result-effective variable, wherein a minimum is required to prevent de-activation of the DMC catalyst.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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